

N.Y. (State). Laws, statutes, etc.



UNIVERSITY  
BERKELEY

**L A W S**

OF THE

**STATE OF NEW YORK,**

IN RELATION TO THE

**AND CHAMPLAIN CANALS,**

TOGETHER WITH THE

**ANNUAL REPORTS**

OF THE

CANAL COMMISSIONERS, AND OTHER DOCUMENTS,

REQUISITE FOR A COMPLETE

**Official History of those Works.**

ALSO,

DIRECT MAPS DELINEATING THE ROUTES OF THE ERIE AND  
CHAMPLAIN CANALS, AND DESIGNATING THE LANDS  
THROUGH WHICH THEY PASS.

**PUBLISHED**

IN PURSUANCE OF THE "ACT FOR RE-PRINTING THE LAWS AND OTHER

**OFFICIAL DOCUMENTS,**

RELATING TO THE ERIE AND CHAMPLAIN CANALS

PASSED FEBRUARY 8, 1825.

*See under  
H19*



*For the affirmative.*

1808.

Mr. Adams,	Mr. Selden,
Mr. Barlow,	Mr. Smith,
Mr. Coe	Mr. Thorn,
Mr. Comstock,	Mr. Ward.
Mr. Peck.	

9

Thereupon, *Resolved*, that the senate do concur with the honorable the assembly in their said resolution.

*Ordered*, That the clerk deliver a copy of the preceding resolution of concurrence to the honorable the assembly.



*Extract from the Act of April 11, 1808, chap. 240.*

[Session 31. page 349.]

*And be it further enacted*, That it shall and may be lawful for the treasurer of this state, on the warrant of the comptroller, to pay to the surveyor-general of this state, such sum or sums of money as he may require, to enable him to execute any duties enjoined upon him, by law, or resolution of the two houses, at the present session of the legislature, not exceeding in the whole the sum of six hundred dollars.

\$600 allowed  
for the expense  
of &c.



### III.

TO JAMES GEDDES, Esqr.

SIR,

I have appointed you to make the surveys, and take the levels requisite to carry into execution the views expressed by the current resolutions of the Senate and Assembly, of the 21st of March last, in regard to a communication by canals, between lake Erie and Hudson's river.

Surveyor General  
appoints  
J. Geddes to  
explore, &c.

As the provision made for the expenses of this business is not adequate to the effectual exploring of the country for this purpose, you will in the first place examine what may appear to be the best place for a canal from Oneida lake, to lake Ontario, in



1808. the town of Mexico, and take a survey and level of it: Also, whether a canal cannot be made between the Oneida lake and Oswego, by a route in part to the west of the Oswego river, so as to avoid those parts along it where it will be impracticable to make a good navigation. The next object will be the ground between lake Erie and lake Ontario, which must be examined with the view to determine what will be the most eligible track for a canal, from below the Niagara Falls, to lake Erie. If your means will admit of it, it would be a desirable thing to have a level taken throughout the whole distance between the two lakes.

As Mr. Joseph Ellicott has given me a description of the country from the Tonnewanta creek to the Genesee river, and pointed out a route for a canal through that tract; it is of importance to have the continuation of it explored to the Seneca river. No levelling or survey of it will be necessary for the present.\* It must be left as a work by itself, to be undertaken hereafter, should the government deem it necessary. A view of the ground only, with such information as may be obtained from others, is all that can now be required of you.

SIMEON DE WITT,  
*Surveyor General.*

June 11, 1808.

\* Because the appropriation will probably by this time be exhausted.



## IV.

1809.

*Report of James Geddes to the Surveyor General, with Appendices A, B, C, in 1809, on the inland navigation between Hudson's river and lake Erie, made pursuant to concurrent resolutions of the Senate and Assembly of 21st March and 6th April, 1808.*

SIMEON DE WITT, ESQUIRE,  
Surveyor General.

SIR,

In obedience to your instructions, relative to "making the  
"surveys and taking the levels requisite to carry into execution  
"the views expressed by concurrent resolutions of the senate  
"and assembly, of the 21st March, 1808, in regard to a  
"communication by canals between lake Erie and Hudson's  
"river," I respectfully submit the following report.

In the several papers marked A, B, C, are contained the particulars relating to

1. A communication between lake Oneida and lake Ontario.
2. The Niagara river.
3. An interior route, without descending to, or passing through, lake Ontario.

In these pages a more general view is taken of each.



#### A COMMUNICATION BETWEEN ONEIDA LAKE AND LAKE ONTARIO.

Ever since the "cutting a canal on the adjacent shore" of the Oswego river has been pronounced "absolutely impracticable,"<sup>1st Branch of the Report.</sup> hopes have been entertained of finding a route from Oneida lake to lake Ontario, so favourable, that although "the distance is 22 miles, it was expected that the line of the canal would not exceed 26 miles."\*

Between Rotterdam on lake Oneida, and Salmon Creek on lake Ontario, I find the summit 110 feet above the level of Oneida lake; or 50 feet above the summit pound-lock at Rome. Now, admitting there was water sufficient to supply the summit between Oneida and Ontario, yet 220 feet of extra lockage, added to 124 feet which Oneida lies above Ontario, makes 344 feet of lockage, an objection to the route which will most probably

\* Mr. Gallatin's report, page 44.



1809. be considered insuperable. The extra lockage alone, would cost sufficient to excavate 22 miles of canal, agreeably to estimates of Mr. Gallatin. This ridge of land can be traced to Oswego Falls, as appears on a map with the papers A, on which are the particulars of the levelling along the road from Rotterdam towards said summit.

*From Oneida lake, following Oneida river and the valley of the Oswego river.*

The rapid at the west end of the Oneida lake falls not quite 16 inches, and there is something over a foot more of fall to the Caughanoy reef, making only 30 inches that Oneida lake can be lowered very easily.

From Oneida lake to Three River Point, [distance estimated] is as follows :

	DISTANCE.	FALL.
	<i>Miles.</i>	<i>Feet.</i>
The lake reef	0 1-4	1 1-2
To head of Caughanoy reef	3 1-2	1
Caughanoy reef	0 1-2	3 1-2
To head of oak-orchard reef	5	0 2-3
Oak-orchard reef	0 3-4	2 1-4
To the bottom of Oak Point reef	2	1
To Three River Point	6	1 2-3
Add for the rise of the water while leveling down		0 11-12
	<hr/> 18	<hr/> 12 1-2

From Three River Point to Oswego, as follows :

To the head of Three River reef is 2 1-4 miles, the fall nearly 2 feet. The reef is 3-4 of a mile long, the fall 5 1-4 feet.

The bottom here is solid rock. Good stone for building. The river — rods wide

Thence to the lower end of the shallow below Horse-Shoe reef, and head of the deep water above the falls, is

Good building stone 2 miles above.

Thence to the head of the falls,

	3	7 1-4
	6	6 1-2
	3	0 1-2
	<hr/>	<hr/>

Carried over,



	DISTANCE. <i>Miles.</i>	FALL. <i>Feet.</i>	1809.
Brought forward,			
Thence to the lower landing of the portage,	1 1-2	37	
Thence to Mooney's Bay,	1 1-2	3	
This bay is generally from 60 to 100 rods wide, and from 15 to 20 feet deep, approaching so much towards a lake, that there is scarcely any perceivable fall in it	2	0 1-4	
Thence almost a continued rapid to Oswego,	7	57	
	<hr/> 42	<hr/> 124	

This distance, in Mr. Gallatin's report, is called 63 miles : perhaps an error of the press.

Whatever may be done by building weirs and making locks, so as to improve the natural channel between Oneida lake and Oswego falls; from the falls to Ontario, there must be a side-cut the whole way. Even the two miles of still water in Mooney's Bay cannot be improved, as this would sink the canal so low, that it could not again be got out of the valley in which the Oswego flows. Indeed, the last four miles deserves not the name of a valley; it is more properly a rocky ravine, through which the river is precipitated with the velocity produced by a fall, which, in one place, is nearly eight feet in half a mile.

The only practicable route I have discovered, is on the west side of the river. In numbers 8, 14 and 15 Hannibal two miles from the lake, there is a cranberry-marsh, the nearest part to the river of which is about half a mile. This marsh empties itself southerly, by an outlet running nearly parallel with the river, until when about four miles from the lake, turning eastwardly, it empties itself into the river. See the Map in paper A. Within a few rods of the north end of said cranberry-marsh, lies a black ash swamp, on the same level or a little lower, which empties northwardly to the lake. These marshes are 9 feet lower than the head of the falls, and the ridge which separates them from the river, falls so low, near a mile from the lake, that a canal led through the valley of these marshes can be brought round the end of said ridge, and from thence, very direct into the harbor of Oswego. The chief difficulty, is to get from the falls into this valley of the marshes. It would require 5 embankments, with a small aqueduct arch, or rather culvert, under each of them.



1809.

The embankments are as follows :

1.	328	yds. long.	25	feet, highest place.	6	feet, average height.
2.	268	do.	16	do.	7 3-4	do.
3.	136	do.	27 1-2	do.	13 1-2	do.
4.	136	do.	10	do.	6	do.

5. About equal to the last one mentioned, and is over the outlet of the Fish lake. Across the ridge, that lies between this outlet and the river, is a piece of *deep-cutting*, 14 chains long, 19 feet deepest place, 8 feet average depth, the stuff very easy to move. But the greatest obstacle is the first 34 1-2 chains below the falls, calculation on which will be attended with great uncertainty, owing to the solid rock, or easier moved stuff that may occur. The lowest 16 chains of this distance, is a bank of from 55 to 65 perpendicular feet in height, rising generally in an angle of  $54^{\circ}$  from the horizon. This bank is, towards the bottom, perhaps all a solid rock of red grit stone. In executing this, it must be wholly a case of embankment, the entire base of which would be in the river. But, as the river never rises more than 18 inches here, and stone is in abundance all along the shore from the falls down, at a small expense, it will be effectually secured against the ravages of the stream. The canal here would have to be from 24 to 27 feet above the bed of the river; and as the whole stuff can be precipitated from the bank above, it will be done much cheaper than by the deep-cutting proposed on the east side of the river, where a canal has been planned: the deepest cutting in which would be 22 feet, and, most probably, near half of it in the solid red grit-rock, where stone cutters are working in the bank opposite to it. A good deal of expense would be incurred to prevent *slips*, where the canal must be carried along sideling ground. About half a mile below the falls, but some chains back from the river, begins a distance of 42 chains, the surface of which lies uniformly in an angle of  $24^{\circ}$  with the horizon. But this is trifling, compared with 89 chains below Broadstreet's Island, 50 chains of which is from 80 to 90 feet, perpendicular height, and the angle with the horizon uniformly about  $30^{\circ}$ . This bank falls gradually to nothing in 9 chains at the north end, and the like in the other 30 chains at the south end. This is all sand, and appears to have received this form in *time*, by the river undermining and carrying away its base, while the stuff slipping from above was of a nature to form said angle. The canal here would be 36 feet above the surface of the river.



I have supposed this would be easier done in the nature of *deep cutting*, rather than of *embanking*, which would require the earth to be removed to the depth of 44 feet in the deepest place, and thrown over the bank, where it would slip down into the river and be carried away. All this, and 3 or 4 miles above, would need lining. At the lower end of this bank, I propose the lock for sinking to the level of the cranberry marsh. About half a mile further down, but out from the river, begins another piece of steep hill-side. It is 59 chains long; much of it is nearly as steep as the last described, but the nature of the soil is such that it will not be so liable to *slip* as the sandy bank above. 1809.

There is one embankment more to be mentioned; it is about half a mile from Oswego village, is 373 yards long, 14 feet in the highest place, the average height 10 feet. It would be attended with the difficulty of not having spare stuff at hand to form it. Just above this, I have planned the place for 3 locks, of 8 feet lift each. If it should be thought advisable to make them of 9 feet each, 3 feet would be taken off the height of the embankment, and the spare stuff for it would be furnished by a short distance of 3 feet deep-cutting at each end. In sight of Oswego, would be all the remaining locks. To get them placed 100 yards apart each, the circuitous track that is marked on the Map, would have to be pursued.

At a small expense, when compared with the object, a basin or dock of 6 acres or more, may be formed in the village, similar to the London Docks.\* The proposed bottom would be 9 feet above the level of the surface of the lake, and to have 9 feet water in the dock for schooners, &c. they would have to be locked up by 2 locks of 9 feet lift each. Three sides of this basin being already formed almost completely by the adjoining high lands, the chief to be done would be the building of a bank or wharf from 6 to 8 feet high, [to the top water line] and 440 yards long.

Absolute necessity would call for this in time, on account of the smallness of the Oswego harbor, which, after wharfing, will

\* "The London Docks, or, as they are sometimes called, the Wapping Docks.—The Great dock covers about 24 acres of surface; the water in it is 23 feet deep. The surface is kept about 3 feet above the ordinary level of the tides by a powerful steam-engine, and the bottom of the dock is about 15 inches above low-water mark in the river. The whole of the site of these docks, was covered either with streets and houses, or gardens, and which the company had to purchase for immense sums of money."

*Rees' Cyclopædia, Art. Canal.*



1809. not cover more than 16 or 18 acres. Should this place be made the emporium of all these lakes, by means of the improvements contemplated, its distinguishing characteristics would undoubtedly be

“ — noise and hurry all,—the throng’d street,  
“ The close-pil’d warehouse, and the busy shop.”

The lockage water would have to be taken from the river and drawn through the whole length of the canal. The Fish lake is a handsome natural reservoir of more than 500 acres, and 21 feet above the level of the top of the falls. But the feeder would have to be near 2 miles long, and must enter the canal not more than that distance from its head. A little water at all times is afforded by the Cranberry-marsh, and a few small springs along the line, which is all that can be got with any reasonable expense.

### NIAGARA RIVER.

2d Branch of the Report. After having finished the levelling of this river from Schlosser to Lewistown, and finding the fall so much less than what it had been stated to be, I carefully went over it again from the brow of the mountain above Lewistown to the landing, and found the result each time almost exactly the same, so that I pretty confidently state the summit of the mountain, where the road passes over it, to be 345 feet above the surface of the water at the wharf at Lewistown. The fall from the still water at Schlosser, to the still water at Lewistown, I make 317 feet. At the end of lake Erie, (called Black Rock) is the principal rapid above Schlosser. From the upper to the lower storehouses of the portage company, is a little over a mile and a half. In this distance the fall is 4 feet 7 inches. To make an experiment on this rapid, there was measured from 14 chains below the upper storehouse to the Ferry,  $\frac{3}{4}$  of a mile, and from the Ferry, half a mile further down. In these five quarters, the velocity was, in each quarter, and the fall in each half mile, as follows :

The object floated through the					Feet.	Inches.
				Minutes.		
1st quarter	in	4 $\frac{1}{2}$	}	the fall	2	1
2d do.	in	3 $\frac{1}{4}$				












<i>Minutes.</i>					<i>Feet.</i>	<i>Inches.</i>	<i>1809.</i>
3d	do.	in	2½	} the fall	1	4.8	
4th	do.	in	2½				
5th	do.	in	3½				
Remainder of the distance to the lower store-house the fall is					} 0	6.3½	

By which it appears, that the velocity of the water through the second half mile, exceeds the first, although the fall is less, caused, doubtless, by the motion of the water acquired in passing through the first, at the beginning of which, it had only just began to move from the dead lake. The velocity of the quarter immediately above the ferry, is at the rate of  $6\frac{1}{2}$  miles per hour. But a light easterly breeze having prevailed over night, the lake waters were said to be receding from the lower end, and the current in the outlet consequently of rather less velocity than common. When the reverse is the case, the swiftest part of the current is probably 7 miles an hour, as the seamen generally say. However, the levelling was gone over again when a breeze the other way prevailed, and the result was nearly the same. The surface of the lake may, perhaps, be estimated at 6 or 8 inches higher still than the head of my levelling.

From Black Rock lower storehouse to Schlosser, an estimate was made of the fall per mile by trying the velocity of the current in places, and levelling and sounding the same. It is put at 6 inches per mile on an average, or 9 feet for the whole distance, which being added to—say 6 feet above, is 15 feet; which, added to 317 feet, makes from the lake to Lewistown 332 feet.

From Lewistown to the garrison at the mouth of the river, the stream is remarkably uniform in depth, width, and velocity of current, but more particularly in the shape of the banks.—On the east side, the beach is so uniformly from 20 to 30 inches higher than the water, and the shore so bold, that schooners, when the wind is unfavourable, are drawn up by oxen the whole distance. The common estimation of the current, is 2 miles, or something more per hour, and a depth of 10 or 12 fathoms water generally. The current seldom delays vessels, only two being towed up last season. Great advantage is taken of the eddies, or strong counter-currents, in so many places along the shore. A few hundred dollars laid out in cutting away the branches of trees that project over the water, or raising the path in some places where the oxen have to travel in the water, particularly in 2




**1809.** or 3 places where they have to swim, is all that will ever probably be needed on this part of the navigation. The width and great depth of the river here, considered, makes 2 feet fall in the six miles, perhaps a large allowance. This would make from lake to lake 334 feet fall.

The portage road from Lewistown up to Schlosser, following its windings up the mountain, is nearly 8 miles. From Schlosser up to lake Erie, the great obstruction to the navigation is the Black-Rock Rapid, at the entrance into the lake. Except half a mile just above Schlosser, the whole distance to the lake, 20 miles, is water 20 and 30 feet deep, sufficient to carry any thing that swims the lake, but the current, more particularly the rapid at the entrance into the lake, makes it unsafe for any lake vessel to enter this river, as half a season might pass away waiting for a wind sufficiently strong and fair to carry her back into the lake again. If a towing-path was made on the bank, a heavy vessel might be towed from near Schlosser to the lower store-house at Black-Rock; but great power must be applied to draw her to the upper store-house, through a current of 7 miles per hour: then there is not depth sufficient, near enough the shore at this place.

The navigation is now carried on in boats of from 20 to 25 tons each. The largest carries 180 barrels of salt, is manned generally by 7 men, who will set her up to the lower store-house in 12 hours, and row her down again in 4. But owing to the great difficulty between the lower and upper store-houses, at Black Rock, this boat generally makes not more than 5 trips a fortnight. In the most difficult part of this rapid, there is now a rope of 75 fathoms, fastened with a ring and bolt, let into a rock in the bottom, by which a boat with half a load is drawn through the ripple by the hands on board. The sum per barrel paid the boat owners is 25 cents; and the waggoners on the portage have 31½ cents. But the whole charge of the portage company for wharfage, extras, &c. is 75 cents per barrel for salt, one dollar per barrel for other merchandize, from Lewistown to Black Rock.

Several difficulties would attend a sloop canal begun at the end of the lake. The first mile and a half is all rock, lime and flint mixed: there is little of it as high as the top water line of the canal would be, and little of it much lower. But a greater difficulty, would be the long distance all the way to Tonnewanta



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length about 10 chains across the lower end of lake Erie, a little **1809.**  
 lower than where the current begins to set out of the lake.   
 Across from the west end of the island for 10 chains further, the water over the rocky bottom is very shallow. This shallow, with the island makes one quarter of a mile, below which is an exceedingly safe, and excellent harbor. The whole eddy may be 60 or 70 acres, all of which is good anchoring ground. On the north-east corner of the island the portage company have last summer built their upper store house. It is a stone building 64 by 44 feet. There is no place on the main shore where a wharf can be built so that a vessel can lay her side to and load. If a place is chosen low enough down to be sheltered by the island from the waves of the lake, there the current is such that without an uncommonly fair wind, a vessel cannot get out into the lake again.\* To make the use of this island convenient, a bridge would be necessary, the length of which would have to be nearly 1000 feet. The breadth of the island now uncovered with water, is scarcely any where more than 10 rods from north to south. The growth of a few willows on it of late, is accounted for on the hypothesis, of the continual lowering of the waters of the lake. No satisfactory information could be obtained as to this; but all agree that it falls some. If a canal should be constructed on the same level with the lake, depending solely on it for the supply of water, and this rapid falling, should prove to be a reality, it would be a serious one. As vague were the accounts obtained of the *annual* rise and fall of the lake. Some set it at a foot, while others would not admit that any such thing was perceivable. But the variation caused by the *wind*, all agreed in setting it over 6 feet. This variation consists almost all in rising: the lake seldom by an easterly wind sinking more than 12 inches below its common level. At Schlosser the *annual* variation is called 8 inches: the variation by the wind 3 feet. This rise occasioned by the wind happens seldom, and is commonly of but a few hours continuance; so that a towing-path along this river, would have almost the same advantages of one along a canal. Considering the annual rise but 8 inches, the river would almost in every respect be similar to one of the

\* If from the main shore half a mile below the island, a strong mole was carried out from the shore, and then parallel thereto up stream, until nearly opposite the island; a fine dock for wharves along the main shore would be formed thereby, out of which vessels could sail into the lake as well as from behind the island.



1809. running canals of China; and much superior to some of them, the velocity of which, according to Sir George Staunton, is equal to  $5\frac{1}{2}$  miles per hour.

Lake Erie is said to be much shallower than lake Ontario. The former being frequently frozen over, and no such thing ever happening to the latter, is satisfactory proof of this.

I was surprised when at Schlosser, to see a waggon taken apart and put on board a boat, to be carried to Black Rock; and on enquiry found there was no road between those places. It is not only impassable for waggons, but afterwards in travelling up on horse-back to Black Rock, I was obliged to drive my horse into some of the creeks, and swim him over before me. The mail carrier is obliged to quit our territory to get the mail from Buffalo to Niagara garrison. In the event of war, the distress would be serious, to have one of these infant settlements attacked, and no road for the other to come to its relief.

I have taken this step aside, to report upon roads, at the request of some respectable citizens of that country, and hope this reason will be received as my apology.

## AN INTERIOR ROUTE,

*Without passing through Lake Ontario.*

3d branch of  
the Report.

This route is proposed from the Oneida lake, along the track at present pursued by the navigation to the Cayuga marshes, thence up the valley of the Mud creek, and across the country to the Genesec river, thence up Black creek to the Tonnewanta swamp, and down the Tonnewanta creek to Niagara river, and up the same to lake Erie.

In order to examine the rivers flowing out of the Oneida and Cayuga lakes, I beg leave to transcribe from Rees's new Cyclo-pedia, the observations of Mr. Thomas Telford, on the improving of *natural rivers*, and the objections to them.

“ Mr. Telford proposes to erect solid and durable weirs of masonry across the river, upon the shallow places, with side-cuts and pound-locks by the side of them, for the navigation; and the river, when thus diverted may, (as he justly observes,) be applied to many important purposes of machinery, and for irrigation of the meadows which would thus be brought within its reach. There is no doubt but this method is practicable,



length about 10 chains across the lower end of lake Erie, a little lower than where the current begins to set out of the lake. 1809.  
 Across from the west end of the island for 10 chains further, the water over the rocky bottom is very shallow. This shallow, with the island makes one quarter of a mile, below which is an exceedingly safe, and excellent harbor. The whole eddy may be 60 or 70 acres, all of which is good anchoring ground. On the north-east corner of the island the portage company have last summer built their upper store house. It is a stone building 64 by 44 feet. There is no place on the main shore where a wharf can be built so that a vessel can lay her side to and load. If a place is chosen low enough down to be sheltered by the island from the waves of the lake, there the current is such that without an uncommonly fair wind, a vessel cannot get out into the lake again.\* To make the use of this island convenient, a bridge would be necessary, the length of which would have to be nearly 1000 feet. The breadth of the island now uncovered with water, is scarcely any where more than 10 rods from north to south. The growth of a few willows on it of late, is accounted for on the hypothesis, of the continual lowering of the waters of the lake. No satisfactory information could be obtained as to this; but all agree that it falls some. If a canal should be constructed on the same level with the lake, depending solely on it for the supply of water, and this rapid falling, should prove to be a reality, it would be a serious one. As vague were the accounts obtained of the *annual* rise and fall of the lake. Some set it at a foot, while others would not admit that any such thing was perceivable. But the variation caused by the *wind*, all agreed in setting it over 6 feet. This variation consists almost all in rising: the lake seldom by an easterly wind sinking more than 12 inches below its common level. At Schlosser the *annual* variation is called 8 inches: the variation by the wind 3 feet. This rise occasioned by the wind happens seldom, and is commonly of but a few hours continuance; so that a towing-path along this river, would have almost the same advantages of one along a canal. Considering the annual rise but 8 inches, the river would almost in every respect be similar to one of the

\* If from the main shore half a mile below the island, a strong mole was carried out from the shore, and then parallel thereto up stream, until nearly opposite the island; a fine dock for wharves along the main shore would be formed thereby, out of which vessels could sail into the lake as well as from behind the island.



1809. running canals of China ; and much superior to some of them, the velocity of which, according to Sir George Staunton, is equal to  $5\frac{1}{2}$  miles per hour.

Lake Erie is said to be much shallower than lake Ontario. The former being frequently frozen over, and no such thing ever happening to the latter, is satisfactory proof of this.

I was surprised when at Schlosser, to see a waggon taken apart and put on board a boat, to be carried to Black Rock ; and on enquiry found there was no road between those places. It is not only impassable for waggons, but afterwards in travelling up on horse-back to Black Rock, I was obliged to drive my horse into some of the creeks, and swim him over before me. The mail carrier is obliged to quit our territory to get the mail from Buffalo to Niagara garrison. In the event of war, the distress would be serious, to have one of these infant settlements attacked, and no road for the other to come to its relief.

I have taken this step aside, to report upon roads, at the request of some respectable citizens of that country, and hope this reason will be received as my apology.

### AN INTERIOR ROUTE,

*Without passing through Lake Ontario.*

3d branch of  
the Report.

This route is proposed from the Oneida lake, along the track at present pursued by the navigation to the Cayuga marshes, thence up the valley of the Mud creek, and across the country to the Genesec river, thence up Black creek to the Tonnewanta swamp, and down the Tonnewanta creek to Niagara river, and up the same to lake Erie.

In order to examine the rivers flowing out of the Oneida and Cayuga lakes, I beg leave to transcribe from Rees's new Cyclo-pedia, the observations of Mr. Thomas Telford, on the improving of *natural rivers*, and the objections to them.

“ Mr. Telford proposes to erect solid and durable weirs of masonry across the river, upon the shallow places, with side-cuts and pound-locks by the side of them, for the navigation ; and the river, when thus diverted may, (as he justly observes,) be applied to many important purposes of machinery, and for irrigation of the meadows which would thus be brought within its reach. There is no doubt but this method is practicable,



“ and would ultimately answer well; but the expense would be 1809.  
 “ very great of erecting substantial weirs,(1) and making the  
 “ banks of the side-cuts and walls, and gates of the locks, high  
 “ enough (2) to prevent the floods from breaking over into them,  
 “ a condition which seems necessary, if the barges are to be  
 “ able to proceed at all times. The towing-path (3) should also,  
 “ for the same purpose, be made up with a regular sloping bank  
 “ next the river, presenting no inequalities, or projecting objects  
 “ to catch or wear the towing-lines, so that its top or path  
 “ should be always above water. On a river which rises 16 or  
 “ 17 feet or more,(4) these works would be attended with a most  
 “ serious expense and difficulty, particularly when cliffs (5) rise  
 “ almost perpendicularly up from the bed of the stream. Ma-  
 “ chinery on such a stream, unless great expense indeed was in-  
 “ curred to obviate it, would be subject to have its works inter-  
 “ rupted by every large flood.(6) Tall masts must be used for  
 “ attaching the towing lines in dry times, and in floods it must  
 “ be fixed lower down, or to a shorter mast.”

Scarce any of the difficulties here started, would attend the streams issuing from the Oneida and Cayuga lakes. I will consider them each in the order in which I have marked them.

(1.) The expense of making weirs across these streams would not be great, considering there is only 12  $\frac{1}{2}$  feet fall from Oneida lake to Three River Point. One dam of 5  $\frac{1}{2}$  feet, and another of 4  $\frac{1}{2}$  feet, each about 20 rods long, would make the whole 18 miles still water, or nearly so. From Cayuga lake to the Three River Point, nearly 44 miles, has not been levelled. The whole fall may be estimated at somewhere about 22 feet. This whole distance may (by making the upper one 9 or 10 feet high) be stilled by three weirs. The whole distance on both streams being together, 62 miles, brought to 6 levels by 5 small dams. To the eastern level add the Oneida lake of 20 miles, and to the western level the Cayuga lake of 36 miles, and the whole will be 118 miles of still water, at the expense of but 5 weirs; in all only 34 feet lockage. On all this route there is no stone suitable for locks or weirs, but 2  $\frac{1}{2}$  miles below Three River Point, there is enough that is good.

It is the opinion of many, that wood weirs, and even wood locks, until our forests become of far more value than they now are, will be found much cheaper than those of solid masonry. If money is worth 7 per cent. (interest to be paid annually) which



1809. late events seem to shew, then the interest will equal the principal in  $10\frac{1}{2}$  years. And if a stone weir will cost 6 times as much as one of wood, the interest of the stone one will, at the end of  $10\frac{1}{2}$  years, build 6 wood ones. The price of a lock on the Mohawk \$7,500, doubling itself every  $10\frac{1}{2}$  years, will do much in supporting wood locks, in a country where the owner of timber, instead of expecting to get any thing for it, is continually paying large sums to get it burnt out of his way. A lock of square juniper logs cost \$300,\* (in a place probably where nothing was paid for the timber;) so that the interest on the sum laid out for a Mohawk lock, would at the end of  $10\frac{1}{2}$  years, build 25 locks in the Dismal Swamp.

(2.) To "make the banks of the side-cuts, and walls and "gates of the locks, high enough to prevent the floods from "breaking over them," is a very easy thing on a stream which never rises higher than the lift of a common lock.† Mr. William Chapman says that "during the flooded state of rivers, all "small falls are equalized, as they necessarily rise higher below "than above a rapid." This observation applies to these streams in a very extraordinary degree, owing to their peculiar formation. In one place falling 3 or 4 feet in half a mile, then 6 or 8 miles very deep, and almost level; again a rapid, &c. In the middle of these long levels, the flood will rise 10 or 11 feet, while on the rapids, it will not be more than 5 or 6 feet. Therefore, it would never happen that a lock would be placed in a part of the river that would rise more than 7 or 8 feet.

(3.) The making of towing paths would be attended with difficulty, occasioned by the low banks that are on one side or the other of almost the whole length of the Oneida river; changing sides some places almost every ten chains. There is not more than 2 or 3 places (a short distance each) where there are low banks on both sides in the same place. On one third of the Oneida river, perhaps, these low banks would have to be raised

\* See Mr. Gallatin's Report, page 17.

† From the best information that could be obtained of people paying but little attention to such things, the Oneida stream rises 8 or 9 feet once every year—has risen 11 feet, and some springs does not rise more than 5 or 6 feet. There is but one annual flood. The most extraordinary summer thunder-storm never raises it more than 18 inches. The highest flood is about the 20th of April—Falls within the low banks between the 1st and 10th May. The Cayuga stream very similar. At the middle of the long level at the Onondaga cut-off, 10 feet rise, as the water rises. The information of the Oneida river, raised fall rains have raised these streams 3 or 4 feet, and that had almost equal to the one on Cayuga flood. The like never seen before by the Oneida river.



from 2 to 6 feet unless the towing path was made to change sides so often as to be very inconvenient. On the Cayuga outlet this difficulty would not be so serious. 1809.

(4.) and (5.) These streams rising only as has been stated, and having no rocky shores, nor any difficult perpendicular banks, they are not affected by this difficulty.

(6.) Machinery will be subjected to interruption a month or 6 weeks, by every spring-flood. But as this interruption will take place at regular periods, calculations can be made to meet it, so that the inconvenience would be trifling when compared with such hindrances on common rivers.

To improve more perfectly this extensive piece of inland navigation which nature has almost finished to our hand,\* it has been proposed to open the outlets of these lakes, or deepen their upper bars, so as to lower the surfaces of the lakes annually—say 3 feet each, below their present low water mark. So that the lakes by rising to their present high water mark, would act with near double their present effect, as reservoirs to check the sudden and great rises of the outlets. The ordinary and pretty uniform annual rise of the Cayuga lake is now 4 feet. Oneida perhaps about the same; and if, by this deepening, and fixtures at the weir next below the lake, a variation, or rise, of 8 feet annually could be produced, the effect in receiving and keeping back the top waters of the floods, would be double what it now is.†

Mr. Thomas Telford, to improve the river Severn has proposed to collect “the flood waters into reservoirs, the principal ones to be formed among the hills in Montgomeryshire. By this means the impetuosity of the floods might be greatly lessened and a sufficient quantity of water preserved to regulate the navigation of the river in dry seasons.” This has been approved of, and it has been condemned. Mr. William Jessop says “that the rivers may be rendered nearly uniform throughout the year by reservoirs.” Mr. Rennie intimates, that the idea of “correcting the floods of the Severn by reservoirs must appear to be ridiculous.” This opinion of the Oneida river, perhaps would not be given, when a reservoir of near 50,000 acres, 3 feet deep, is proposed at no expense of land, and little

\* Dr Rees's New Cyclopaedia says of this, that “nature has done so much, that little is left for art to accomplish,” and counts from Schenectady to the south end of the Cayuga lake, “280 miles in extent, and through a tract of country unrivalled in point of fertility.”

† Provided the banks were perpendicular.



1869. otherwise.\* The lowering of the Cayuga lake, for the purpose of draining the Cayuga marshes, has long been talked of, and the great tract of excellent alluvial soil that would be obtained thereby, would make it an object worthy attention. Whether both objects would be attained or not, is questionable.

If by such means, towing-paths, that would never be flowed, could be constructed about 5 feet higher than the then low water mark of the rivers, much would be gained in the efficiency of the towing-paths, and a great saving had in the expense of making them on the low banks which are on so great a proportion of these streams.

If the fertile country around these lakes and rivers which would be immediately benefited by this work, should alone be of sufficient importance, to cause it to be done in a complete and perfect manner, as far west as the Cayuga; then the continuance of the *interior route* and the *route through Ontario lake* may be more easily compared by considering the *Ontario route* to start at Three River Point, and the *interior route* from the *Cayuga marshes*.

From the Cayuga marshes to Black-Rock is 109 miles, measured in a direct line on a map. Almost every thing respecting this space has been supplied by conjectures formed from appearances on the map. The summit between Tonnewanta creek and Black creek† is an extensive level of wet land called the *Tonnewanta swamp*, and is estimated by judge Ellicott at only 20 feet or so above the level of the mouth of Tonnewanta creek. If so, said summit is scarcely 10 feet above the level of lake Erie. It is stated that by means of Oak Orchard creek, and other streams that can be commanded, there will be a sufficient supply of water for said summit, and that a canal the greater part of the way, may be made almost straight, and the cutting very easy.

From Genesee river to the head waters of Mud creek,‡ I have levelled and find the summit§ between the waters of Gerundegut and those of Mud creek, 36 feet lower than the Genesee river above the falls, and no high land rising between, except a few chains of gravelly bank at leaving the river, of from 4 to 12 feet

\* For less than \$300, channels have been proposed to be ploughed in all the 3 rapids on the Oneida river so that boats should have a sufficient depth at all times.

† Black creek empties into the Genesee river a few miles above the Genesee falls.

‡ Mud creek runs directly to the Cayuga marshes.

§ This is near the west line of Palmyra in the town of Boyle. I have therefore named it Boyle summit.



deep. The country is free from stone almost every where along the line for the canal, and the chief difficulty in making the water of Genesee river run down Mud creek to the Cayuga marshes, would be the depth and width of the Gerundegut valley. The best place for crossing is over Mann's mill pond. [See the map in paper C.] The pond is 4 or 5 feet deep, and 2 chains 70 links wide, and the surface of it would be 68 feet below the top water line of the canal. The whole length of the aqueduct-bridge and embankments at the ends would be 22 chains 90 links [504 yards.] Allowing 2 chains 70 links for an aqueduct-bridge, there will remain at both ends 20 chains 20 links of embankment; the highest place at the west end 43 feet, highest place at the east end 34 feet. A great circuit is made in getting away from the river, and across this valley, so that the line of canal would be over 18 miles, while the direct line is but  $12\frac{1}{2}$  miles. From this line of levelling, I have levelled across to the Gerundegut bay, and determined the whole fall of the Genesee river from above the falls to the lake.

1809.

The following places stand above the level of the tide at Troy, thus :

	<i>Feet.</i>	
Lake Erie,	541	
Tonnewanta swamp,	551	Estimated per Mr. E.
Genesee river, (above the falls,)	460	
Boyle summit,	424	
Cayuga marshes, (or lake,)	340	Estimated.
Three River Point,	318	
Oneida lake,	330	} By Mr. Weston.
Summit pound at Rome,	390	
Lake Ontario,	206	As results.

From the Boyle summit down to the Cayuga marshes, through the Mud-creek valley, a canal may be conducted pretty straight, the fall being 84 feet.

If the *Interior route* should be pursued to Lake Erie, the communication with Lake Ontario would be by a lateral cut of between 3 and 4 miles in length, from above the Genesee falls to the harbor in the mouth of that river. As boats might be conducted on the same level almost to the harbor, it might never be found necessary to lock down 254 feet from the canal into this lake. This harbor is very spacious, putting in from the lake between 3 and 4 miles. The channel, or mouth of the harbor is difficult,



1809. as it runs out into the lake above a mile, but little north of an east course, so that a vessel whose destination is westward, having a fair wind for that point, cannot get out. The entrance to the harbors of *Genesee river*, *Sodus bay*, and *Oswego river*, are in depth almost exactly equal; each from 6 to 7 feet over the bars at their mouths.

To carry branches to the Skaneateles and Owasco lakes, there would be objected the great lockage necessary. From conversations had with some of the most intelligent mill owners, along the out-let, I have estimated the Owasco lake to be nearly or about on the same level with Lake Erie. And Skaneateles can differ but little from it. From the levels taken of the Seneca falls, and Scowace reef, by Mr. Weston, the Seneca lake has been estimated at 50 feet above the Cayuga lake, which brings it exactly on the same level with the summit-pound at Rome; according to my estimate of the Cayuga, above Three River Point. To connect Seneca lake with the Cayuga, the chief expense would be the locks and towing path; the building and keeping in repair of weirs, would most probably be had for mill privileges.

Some universal condemners of *river navigation* and enemies to *great lockage*, have ridiculed the idea of following the Cayuga and Oneida streams, or falling 72 feet into the valley at Three River point. And to avoid this 144 feet of extra lockage, would be at the expense of an aqueduct bridge 50 feet high over the Cayuga out-let at Bluff point; thence following the level along through Brutus, Camillus, &c. With such a level as this, it might be difficult to connect the Seneca lake by any thing of a direct line, and the Onondaga, Chittenango; and Oneida valleys would make bad bends in the main line. According to the level taken at Mr. Walton's mills, the banks there were 37 feet above the level of the Onondaga lake; this would bring the level of the *Rome summit* as far up the Onondaga valley as Mr. T. M. Wood's mills. The idea of a *level* above 100 miles\* in length, on the main line of a canal, commanding many rivers for a supply of water; nothing in the world would be equal to it. The idea is a grand one if it would but prove useful. Low places would occur in the ridge bounding the Mud-creek valley on the north, that would need filling up in some places 10 or 20 feet high.

\* Much is valued the advantage enjoyed by Coventry, in England, of 73 miles of level navigation on 3 canals.



Another route has been proposed, by keeping the level of the Cayuga lake past Salina, and along the south side of the valley of the Oneida lake, until said level would strike Wood creek. By this route 44 feet of lockage is to be saved, and the Onondaga Salines enjoy an extensive level, very valuable for the immense supply of wood it would afford. With this level, by a lock of ten feet lift, might be connected the Oneida lake, by which means the forests on all its shores, could be brought to these Salines through a canal of not more than 12 or 14 miles in length. In favour of this route is urged the opinion, that the Oneida lake can never answer as a part of the main line of canal from Erie to the tide; as the barges that would ply on it, would be no ways calculated for such a lake. 1809.

In comparing the *Ontario route* with the *Interior one*, it is obstinately insisted upon, in favor of the latter, that it would be bad policy in the United States, to open a communication for sloops between Erie and Ontario, as the products of all the upper lakes would on their passage to the ocean, come into Ontario, and when there, the lockage to the tide in the St. Lawrence being only 206 feet, while it is 574 feet to the tide in the Hudson, there would be danger of the whole lake trade being diverted to a port in the territory of another nation. It is likewise contended, that if the two routes should not differ materially in the cost of making, the *Interior one* ought to be preferred, as being free from the risk and uncertainty of *wind and waves*: That merchants can afford to pay higher freight when property is secure, and will arrive on a day *certain*. "It is a consideration of some importance," says a correspondent, "that the inland canal would always be safe in the event of a war with Great Britain. It will impose an additional value on a long tract of fine country, through which it must pass; will increase its population, and of course the wealth and prosperity of the state."

On the other hand, it is insisted upon that cheapness of conveyance, the grand desideratum in all such works, would best be obtained by the *Ontario route*, as the great emporium of the lakes would be 150 miles\* nearer the tide in the Hudson, if placed at Oswego, than if at Black-Rock; and that the produce of the upper lakes would be carried cheaper through Ontario to Oswego, than 150 miles forward on a canal. In answer to this,



1809. the fact is stated, that \$5 25 is now the common price for carrying 7 barrels [about a ton] of salt from Oswego to Lewistown, 26 miles short of Black-Rock, while, according to Mr. Robert Fulton's calculation, a ton would be carried 150 miles on a canal for \$1 50. Mr. F. supposes the case of a canal being made at the public expense, and no toll taken but the charge of the bargemen. If the cost of making would amount to the same on either route, then the toll due a canal company would be the same on either, and the one being set off against the other, brings it to the bargemen's charge, as stated by Mr. F.

As to further particulars respecting the *interior route*, it would be important to know : whether there is not some place in the ridge that bounds the Tonnewanta valley on the north, as low as the level of lake Erie, where a canal might be led across, and conducted onward, without increasing the lockage by rising to the summit of the Tonnewanta swamp : or if this summit must be surmounted, to ascertain its height above the level of lake Erie ; likewise whether water sufficient to supply it, can be had with moderate expense. Whether the valley of the Tonnewanta is free from lateral ravines, high and abrupt banks, and such like impediments to a side-cut, is not known. The same is to be observed of the valley of Black creek ; and likewise of the valley of Mud creek.

The levelling from the Genesee river to the Boyle summit, being done in the woods, and snow cannot be depended on as to extreme exactness, nor have I drove any levelling pegs in any part of my work, or attended to that nicety requisite for the actual staking out a canal ; but suppose it will be found exact enough to answer the purpose intended.

The whole is submitted with respect, by

Your most obedient,  
humble servant,

JAMES GEDDES.

Onondago, January 20, 1809.

To SIMEON DE WITT, Esq. Surveyor General.